FROM PLOWSHARE TO SWORD: HISTORICAL HIGHLIGHTS OF GUNPOWDER NECK AND EDGEWOOD ARSENAL TO THE END OF WORLD WAR I

By
Jeffery K. Smart

Within a few brief months the peace and quiet of the fields and woodlands of Gunpowder Neck have given way to the hum of a mighty industry devoted to the manufacture of death-dealing material. The plowshare has been beaten into the sword, and the story of this transformation is briefly recorded here, in the hope that it may serve in future years to recall to those who have labored so incessantly in bringing about this change, the part they played in the winning of the Great War.

The Chemical Warfare (March 1919)

Introduction

Less than a year after the start of World War I in Europe, in the Spring of 1915, the Germans placed 1,600 large and 4,130 small gas cylinders containing a total of 168 tons of chlorine gas opposite the Allied lines at Ypres, Belgium. On April 22, the Germans released the gas. It drifted with the wind across No-Man's Land and over the Allied lines. The Allied troops:

The gas attack at Ypres on April 22, 1915

saw the vast cloud of greenish-yellow gas spring out of the ground and slowly move down wind towards them, the vapor clinging to the earth, seeking out every hole and hollow and filling the trenches and shell holes as it came. First wonder, then fear; then, as the first fringes of the cloud enveloped them and left them choking and agonized in the fight for breath--panic. Those who could move broke and ran, trying, generally in vain, to outstrip the cloud which followed inexorably after them.[1]

Despite some advance warning of the attack, the Allied line quickly fell apart. A British soldier later wrote:

Nobody appears to have realized the great danger that was threatening, it being considered that the enemy's attempt would certainly fail and that whatever gas reached our line could be easily fanned away. No one felt in the slightest degree uneasy, and the terrible effect of the gas came to us as a great surprise. . .[2]

The aftereffects of this unique attack had far and wide implications. For Harford County, Maryland, the primary impact was on a small peninsular jutting into the Chesapeake Bay. Known as Gunpowder Neck, this piece of land would be significantly changed by the event that took place in Belgium.

Gunpowder Neck - Pre-1917

Gunpowder Neck in 1915 was rural farmland and dense woods. The name Gunpowder had several stories as to its origin. One story was that early settlers gave gunpowder to the local Indians. Believing it to be a seed, the Indians planted it in the ground. A more likely version was that the name stemmed from Salt Peter Creek, near Carroll's Island, which had a similar name to salt petre, a key ingredient of gunpowder.

A Susquehannock warrior

At the time of the settlement of the eastern seaboard by European colonists in the 17th century, its twenty square miles, stretching between the Bush and Gunpowder Rivers into the Chesapeake Bay, were part of the territory of the Susquehannock Indians. Captain John Smith, an English explorer, investigated the region in 1608, possibly entering the Bush River. Subsequently, the peninsula was included in the proprietary colony of Maryland, bestowed by King Charles I on Lord Baltimore.[3]

In 1663, the proprietor granted a large area, which included Gunpowder Neck, to Thomas O'Daniel, who later led a group of settlers to his acquisition. These first English settlers of the peninsula were soon followed by others. Many of these early settlers were memorialized by the naming of various landmarks around the peninsula, to include Maxwell Point, Watson's Creek, and Day's Point.[4]

By the time of the Revolutionary War, the peninsula was still only sparsely settled. Although the peninsula apparently played no major role in the war, two local merchants who owned a gristmill on the Gunpowder River near Joppa did enter the history books. Westcott Piquot (also spelled Pickett or Pigot) and John Paul apparently opened a profitable trade with British ships patrolling the Chesapeake near Maxwell Point. Both were discovered, arrested, and sentenced to death. Paul somehow escaped and hid along the Gunpowder River, thus avoiding the noose. Piquot was not so fortunate and was hung, possibly in the presence of Major General Marquis de Lafayette who was moving his forces through Harford County at the time.[5]

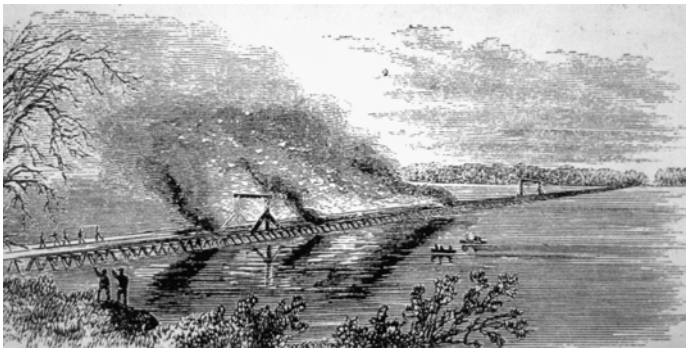
George Cadwalader

During the War of 1812, the 42nd Maryland Militia, a Harford county unit under the command of Colonel William Smith, briefly occupied a position on Gunpowder Neck during July 1814. From their position, they could observe a full view of the Chesapeake Bay from Spesutia Island to Kent Island. They did not, however, engage the British during their occupation.[6]

Beginning about 1846, the greater part of the peninsula passed into the hands of George Cadwalader who purchased most of the peninsula within 15 years. Cadwalader was a native Pennsylvania lawyer who practiced in Philadelphia. During the Mexican War, he was a brigadier general of volunteers and was made a brevet major general for his service. Before the Civil War, he was active in the Pennsylvania militia. Cadwalader made Gunpowder Neck his country estate.[7]

The Civil War briefly touched the Gunpowder Neck area twice. The first incident occurred after the Baltimore riot of April 19, 1861 during which citizens attacked Northern troops passing through the city on their way to Washington, D.C.. Following the violence, the Mayor of Baltimore appealed

for peace and sent a letter to President Abraham Lincoln asking that no more troops be sent through Baltimore. To ensure that all troop trains were stopped from entering the city, the Chief of Police took a more direct approach and ordered the railroad bridges over the Gunpowder and Bush Rivers burned. Although the wooden bridges were quickly repaired and communication with the North restored, the importance of these two bridges to the Union war effort was clearly shown. During the rest of the war, Union troops protected the bridges.[8]



The burning of the Gunpowder Bridge in 1861

The second incident occurred in 1864 during a cavalry raid by Confederate Major Harry Gilmor. On July 10, Gilmor was sent to destroy these same railroad bridges. The next day, Gilmor arrived at Magnolia Station, about one and one-half miles north of the Gunpowder River Bridge. There, he captured the telegraph operator and soon after, the 8:40 train from Baltimore.

Gilmor wanted to take the train to Havre de Grace and then burn every bridge between the Susquehanna River and Baltimore, but he discovered that the engineer had escaped after damaging the engine, so he ordered the train burned. Then the 9:50 express train arrived from Baltimore. He seized this one also, and was able to keep it running despite the engineer escaping.

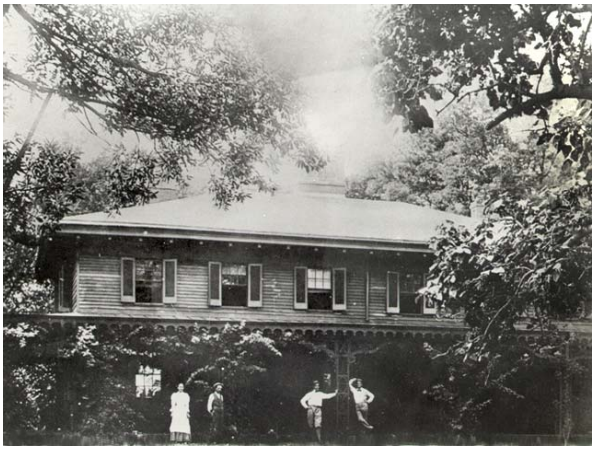
After capturing the two trains, Gilmor turned his attention toward his real target, the Gunpowder River Bridge. The Union forces had about 50 soldiers protecting the north end of the bridge. In addition, the gunboat *Juniata* was standing off the bridge in the Gunpowder.

Gilmor attacked the Union troops and drove them in retreat out onto the bridge. He then set one of the trains on fire and sent it out onto the bridge also. Many of the Union soldiers were forced to jump into the river to avoid the burning train. The burning train stopped directly over the draw portion of the bridge and soon burned through the bridge and fell into the water. After successfully destroying the bridge, Gilmor began his return trip back to Baltimore. The bridge was repaired a few days later and peace quickly returned to the peninsula.[9]

As a side note, one of Gilmor's raiders was supposedly Frank Gowan, who was captured and imprisoned in Fort McHenry. From there, he somehow escaped by floating on a barrel with his feet shackled. He later returned to the area and became the Cadwalader family's caretaker for their property on Gunpowder Neck.[10]

After the war, farming and duck hunting resumed their place as the chief concerns of the Gunpowder Neck area for the next half-century. There were several gun clubs located on the peninsula that were quite popular. Grover Cleveland often visited the gun club located in the San Domingo area of the peninsula. There were also three general stores, a large wheelwright factory, and a tomato cannery.

Cadwalader maintained a large country estate on Maxwell Point. His mansion was a two- story wooden house with a large porch and many fireplaces. His hobby was collecting ornamental trees that decorated his garden around the house. Upon George Cadwalader's death in 1879, the property passed to his nephew, John Cadwalader, also a Philadelphia lawyer. He used the mansion for extended stays during the Spring and Fall. Gowan remained caretaker and game warden for the Cadwalader's lands.[11]



The Cadwalader mansion on Maxwell Point

World War I Comes to Gunpowder Neck

The great mobilization of the nation's resources for World War I reached Gunpowder Neck in the autumn of 1917. The need for an expanded Ordnance proving ground was the impetus behind Congressional action authorizing the acquisition of large tracts along the shoreline of Harford County. Originally, the proposal was to use Kent Island, across the Chesapeake for the proving ground. This plan was stopped for various reasons and in late 1917, President Woodrow Wilson approved Gunpowder Neck for inclusion in the new proving ground.

Wilson's first proclamation claiming the land was dated October 16, 1917 and was amended December 14. The proclamation entitled the owners of the land to recover some of their cost and gave them until January 1, 1918 to vacate the land. Some occupants went willingly. Others went grudgingly. Cadwalader went willingly, but attempted to slow the process to help his tenant farmers find places. His efforts received criticism for being unpatriotic.[12]

Others who had financial damages from the land takeover, particularly in the Aberdeen area, later sought reimbursement. During those hearings in 1931, Senator Millard E. Tydings, described the feelings of those giving up their land or losing their livelihoods in 1917:

> *Here was a country at war, and it was necessary to act quickly. We could not go into courts, where these men would have had a chance to be heard, and condemn property for Government use. We were at war and the proving ground was badly needed. People were told to willingly throw in what they had because the little loss they might sustain was not important compared with the loss of lives and the matter of winning the war.*[13]

Although Cadwalader gave up his mansion on Maxwell Point for the war effort, his family did not have pleasant memories of the incident. His grandson, writing in 1984, remembered:

> *The colonel in charge of the takeover rudely turned away family members who tried to return to the Point after the deadline, but made no effort to keep out junk dealers and other scavengers, who quickly stripped the house of stair rails, mantelpieces and interior woodwork.*

The Cadwalader caretaker, Gowan, was one of the last civilians left on Gunpowder Neck. Unfortunately, in December 1917, while trying to light a kerosene stove in his house, he accidentally set his clothes on fire. The burns proved fatal and he died in a Baltimore hospital.[14]

The larger part of the new proving ground north and east of the Bush River became Aberdeen Proving Ground, an Ordnance proving ground. Approximately 3,400 acres of Gunpowder Neck, however, were set aside for a special project. The Chief of the Ordnance Department, in June 1917, had verbally approved a plan to construct an experimental chemical shell filling plant in the United States, but had not yet selected a site. The acquisition of Gunpowder Neck, particularly the northern section, accessible by two rivers and the Pennsylvania Railroad, solved the location problem.[15]

Construction of Edgewood Arsenal

Soon the wheat fields and woods gave way to a massive government construction project. Starting on October 24, 1917, a railroad spur was cut from the main Pennsylvania Railroad line and supplies brought in by train. Temporary labor camps, consisting of two story wooden barracks, sprang up in several locations on the peninsula

The wheat field where Shell Filling Plant No. 1 was built.

for the large influx of construction workers and contractors. During one of the coldest recorded winters, these workers began construction of Gunpowder Reservation. When digging sewer and water lines, the workers had to build fires all along the proposed line to unfreeze the ground. At times, they had to resort to explosives to break up the frozen ground. The men standing around fires to keep warm lost much work time. Due to the importance of the project, the men worked long hours, including Sundays.[16]

The temporary labor camp

On March 6, 1918, Colonel William H. Walker was ordered to take command of Gunpowder Reservation. Walker was a logical choice for the command. Prior to the war, he had graduated from Pennsylvania State College in 1890 with a B.S. degree, and received his Ph.D. from the University of Goettingen in 1892, specializing in chemistry and chemical engineering. In 1894, he became a professor at the Massachusetts Institute of Technology. He was described as one of the foremost men in the field of chemical engineering and chemical engineering training.

His headquarters, initially in Washington, D.C., were moved to Baltimore in April. That same month, his command was increased to include other chemical production sites around the country. This new organization, designated an arsenal, was given the name of the railroad station near the front gate of its primary post, which also took the same name. Thus, the new plants on Gunpowder Neck became known as the Edgewood Plants of Edgewood Arsenal.

On June 28, 1918, the Army established the Chemical Warfare Service (CWS) to control all chemical production and filling plants in the United States, and also the chemical warfare troops in Europe. The Army formally assigned Edgewood Arsenal to the new CWS on July 1, 1918.[17]

In September, Walker took time out of his busy schedule to write an introductory note for the post journal that explained the purpose for their work and sacrifice at Edgewood Arsenal:

> *The present conflict has developed three methods of attack never before used in warfare: the submarine, the aeroplane, and toxic gases. New departments of the Government have been developed to care for these three arms of the service. None of the three is more important than the organization which supplies our army with both the poison material used in offensive work and the protection necessary to render it proof against the attacks of the enemy. Upon Edgewood Arsenal rests the responsibility of providing the millions of rounds of gas shell and other toxic material which our present artillery program demands. To be a member of this organization means that there is presented an opportunity for service excelled in no other activity in the Government; and with this opportunity for service goes a corresponding responsibility to render at all times the very maximum of effort from every point of view. The American people look to us to provide our men in France with a superior quality of the most effective material in an almost unthinkable amount, and in the experience of Edgewood Arsenal there can be no such word as "fail."*[18]

Colonel William H. Walker

Despite the hopes of Colonel Walker, occasionally, things did go wrong. During the construction process, there was a great fear of the chemical agents. Due to wartime secrecy, not everything was always disclosed to the workers. Perhaps the best demonstration of this problem was the story of the "great skedaddle" in August 1918. Although originally told in the racially derogatory language of the time, the story was that a new civilian teamster was shown a garbage pit sprinkled with chloride of lime. His instructor told him to smell the "funny smell" coming

off the pit. The instructor then told the new employee that the smell was just the way poison gas smelled and that if he ever smelled it, he should "get clear off this reservation - or when you wake up you'll be saying, 'Good morning, St. Peter.'"

A horse-drawn wagon used during construction

Four days later, the new employee was ordered to take his horse-drawn wagon into Edgewood to bring back supplies. Not being able to read, the employee took a road marked "For Motor Traffic Only" and started down the road at a fast clip. A sentry soon stopped him and demanded to know why he was using the road restricted for cars only. Realizing his brief career was in jeopardy, the teamster thought quickly and replied that there was a gas leak and that he was told to leave the area as quickly as possible.

The sentry responded quickly by waving the teamster on past and alerting the corporal of the guard that there was a gas leak. The corporal, looking in the direction of the plants, could only see a haze, but thought something looked strange. He forwarded the message up the chain of command. By the time the message reached the officer of the day, it was "Gas loose in Area D, report of general exodus, apparently authentic."

The officer of the day quickly responded by ordering the general alarm sounded. This was a steam whistle atop the power plant. Some 3,000 workers on duty at the time heard the alarm. For a moment, they probably froze in disbelief. Then they all dropped their tools and began the great skedaddle.

The switch tender at the Magnolia junction on the main Pennsylvania Railroad line also heard the alarm whistle. He looked in the direction of the post and saw a great cloud of dust coming toward him out of which came men on horseback, in wagons, and on foot. He quickly stopped all trains in both directions and phoned his headquarters to alert them of the situation. His superintendent called the arsenal and found out that it must have been a false alarm, because there was no chemical agent leak. However, not believing the word of the military, the superintendent demanded to hear it from Colonel Walker, the post commander. Walker happened to be at a dinner in Baltimore and was finally tracked down with the help of the local newspapers. Of course, he rushed to the post to reassure everyone that it was only a false alarm.

A humorous conclusion to the account was that Walker was met at the gate by a young lieutenant who demanded an immediate transfer. Apparently the lieutenant had been shaving when the alarm went off. With shaving cream still on his face, he had set off running. Either from heat exhaustion or from eating some of the cream, he collapsed along the road, crying out, "The gas has got me!" He was carried to the hospital where, due to his foaming at the mouth, he was initially treated as a serious gas casualty. Only when he heard giggling and snickers in the corridor did he learn that there had been no gas after all. Supposedly the Colonel granted his transfer request.[19]

Edwin M. Chance

Initially, the most important aspect of the new post was chemical shell filling. The man responsible for the design of these plants was Lieutenant Colonel Edwin M. Chance. Chance was a 32-year-old chemist and construction engineer working in Wilkes-Barre, Pennsylvania, before the war. On August 9, 1917, he reported to the Trench Warfare Section of the Ordnance Department and was assigned the project to design a toxic gas shell filling plant. His first action was to examine plans of a French filling plant at Aubervillaries, France. However, after a brief review, he determined the French plant did not have the production capacity the Army sought and, more importantly, created a high casualty rate among the French workers. He was equally unimpressed with British methods for filling gas shells.

Rejecting the French and British plans, he then turned his attention to American commercial methods. The nearest commercial procedure to filling a toxic gas shell was the bottling industry. Chance immediately visited several milk, beer, and carbonated liquid bottling companies. From them, he designed his shell filling plant.

Shell Filling Plant No. 1

Actual construction started on Shell Filling Plant No. 1 on November 15, 1917. The contractor for the plant was the Central Construction Corporation, aided by the Triumph Ice Machine Company, the Link-Belt Company, the Waterbury-Farrel Foundry and Machine Company, the Reynolds Machine Company, the Liquid Carbonic Company, the Karl Kiefer Machine Company, and the Spray Engineering Company.

By late Spring 1918, completed permanent buildings stood where only a few months before were wheat fields. The central powerhouse of the No. 1 Shell Filling Plant was one of the first permanent buildings completed. The first portion of Shell Filling Plant No. 1 became operational on March 11, 1918, less than five months after it was started. Due to a lack of empty shells, actual shell filling operations began on July 11, 1918 when the line began filling 75mm shells with a mixture of chloropicrin and stannic chloride. Unfortunately, there was a continued shortage of complete parts for the shells and the plant was unable to operate at full speed. Still, 426,259 shells were filled and over 300,000 shipped overseas.

After filling, the shells were painted and readied for shipping in shell dumps next to the filling plant. The Army later completed two additional shell-filling plants to fill various caliber artillery shells with chemical agents.[20]

The original plans called for only shell filling plants. The chemical agents necessary for the filling would be obtained from private industry. This plan failed after private industry indicated there was little commercial incentive to convert their plants to chemical warfare agents since there would be no market for them after the war. In addition, the sheer number of shells that could be filled by the new filling plants convinced the Army that onsite chemical agent production plants were necessary.[21]

In December 1917, the Army began construction of chemical production plants adjacent to the filling plants. The chloropicrin plant, started on January 25, was the first unit to produce chemical agent on June 9, 1918. The phosgene plant, started on March 1, became operational on July 5. The chlorine plant became operational August 1.

The construction of the Mustard Agent Plant was perhaps the most important production facility. The Germans first used mustard agent in July 1917 and, due to its ability to cause skin burns and its persistence on the ground, it quickly became known as "King of the Battlefield."

The design of a mustard agent plant fell to Captain Hugo H. Hanson. He put in long hours trying to make the project work. At one point, he was averaging 20 hours per day at work, with only two officers to help him. Their few rest hours were spent at an abandoned farmhouse "close to a dusty road where 'millions' of wagons passed."

Actual construction started May 18, 1918. By late July, the first wing of the plant was completed and production begun on August 1. Unfortunately, the equipment and design had many problems that limited production. In addition, a lack of trained workers, high casualties, and an influenza epidemic, all contributed to a delay in full-scale production.

The low point came on August 21 when Captain William B. Leach was the last available officer and he had been on duty for 16 hours without relief. Due to casualties and the flu, few operators were left and the equipment was failing. About 6 p.m., Colonel Walker walked in to the plant

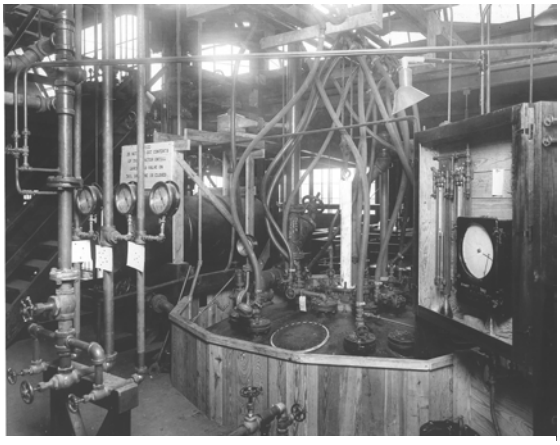
The Mustard Agent Production Plant

and informed him of a new English process to produce mustard agent. Known as the Levinstein process, it would prove to be the answer to the problem. At midnight, Leach shut the plant down.

The first Levinstein unit was operational October 3. The big occasion of its start up was a special event with several "notables" present. Unfortunately it was a complete failure. It took 66 tries to get it right. By the middle of October, another larger Levinstein reactor had been installed in an adjacent building that not only produced more mustard agent, but also did it more safely by being better contained. By November 1, the mustard plant was producing more mustard agent per day than England and France were producing in a month.

In his final report of the operation, Hanson tried to describe the challenges his men faced building this important plant:

> *It would be impossible to praise too highly the patriotism and devotion of our officers and men who stuck to their tasks faithfully during two months of the hardest kind of uphill fighting to produce mustard gas for the soldiers in France. Danger of serious injuries was always present, yet there was no respite except the hospital. During the first month there was no defensive apparatus except the gas mask, and we did not know the best reactive measures. Conception of the trying conditions is most difficult for anyone who was not present; with the temperature at one hundred, with the nauseating and burning fumes always in the air, it was only the thought of the value of our product in France that forced every pound of mustard gas from our first inadequate apparatus. Late in August and September, conditions were modified for the better by changes in the system and by completion of larger and better units. Even then, however, there were always some fumes present, the continued action of which weakened the men's bronchial tubes and lungs. With the coming of the influenza epidemic the men were in no condition to resist its ravages and many died.*



Interior of the Mustard Agent Production Plant

He concluded:

> *It can be truly said that throughout the operation of the mustard gas plant the morale of the men was excellent, and with few exceptions there were no shirkers. Tribute should be paid to all.*[22]

Life at the Arsenal

World War I Edgewood Arsenal was probably not the best assignment in the country. The work was hard and required long hours. The pay was not impressive. Yet the number of personnel involved in the construction and running of the post was impressive. Civilian employment, mostly for construction work, rose to 8,500 in June 1918. From the first, however, the military were not impressed with the civilian workers. Lieutenant Colonel William McPherson, in charge of construction, concluded:

> *Before the chemical plants were completed, however, it became evident that such labor could not be used in their operation. Not only was this labor difficult to secure, but the wages were abnormally high, and as a whole, the*

The Dispensary and Exchange

work was inefficient. Moreover, it was found that such civilian laborers as were available could not be depended upon to work in the chemical plants because of the danger, both real and imaginary, attending the manufacture of such highly toxic material. It was decided, therefore, to utilize enlisted men in this work, and as the projects advanced, increased numbers of such men were detailed to the Arsenal.

The peak military population of Edgewood Arsenal in 1918 was 7,400, organized in four provisional battalions.[23]

Troop Barracks

Besides the production and filling plants, the Army constructed barracks, hospital facilities and other cantonment structures for the workers. These temporary quarters were rustic and cold in the winter. The walls were tarpaper on the outside and composition board on the inside. The barracks were heated with stoves and had electricity for the lights.

Although most of the troops working in the plants continued to live in the temporary wooden barracks, the Army completed 16 permanent two-story troop barracks for 2,700 enlisted men. These were constructed of large tile bricks with spacious living rooms and fireplaces. Lieutenant Colonel Chance later wrote: "it was thought highly desirable to provide living quarters that would be an aid in keeping the morale of the personnel at a high standard." Next to the barracks was a bakery, laundry, and boiler plant. Most of the military, however, lived in the temporary wooden barracks during the war.[24]

Some of the officers took over the abandoned farmhouses and structures on post. Temporary wooden officers quarters were also constructed near the filling plant, chemical plant, and chlorine plant. A permanent officers quarters was constructed overlooking the Gunpowder River.[25]

A farmhouse used as officers' quarters

The post's journal, *The Chemical Warfare*, listed the many morale-building activities available on the new post. Both the Y.M.C.A. and the Knights of Columbus constructed temporary buildings. Bible classes and church services were held every Sunday morning at 9:00 a.m. at two different sites. For Catholics, the Rev. A. A. Herzog, St. Michael's Church, Baltimore, said Mass every Sunday at the same time. Soldiers of the Jewish faith had services each Friday night at 8:00 p.m.. The Y.M.C.A. also held English, French and chemistry classes on post.

The American Red Cross established a Home Service Bureau for the post. This organization was to:

straighten out all business troubles, furnish medical assistance to the families of the boys in the service, secure employment for members of the same family, if desired, loan money to temporarily meet possible necessary demands, and perform like services, tending to increase the peace of mind of the men in the service.

The Red Cross also distributed 1,600 sweaters, 1,900 pairs of socks, and 1,400 "comfort" kits.

There was a library and a "moving picture" theater. A 40-piece marching band was also formed to entertain the troops and perform at official functions.

The Post Exchange, similar to a general store, played an important role in keeping up the troops' morale. The first Exchange was started on January 19, 1918. Unfortunately, it started without any funds and all purchases were made on credit. Eventually there were four Exchanges on the post. Each carried almost anything a soldier might want for his pleasure. This included cigars, chocolate, pies, handkerchiefs, and even a souvenir for "the girl

back home." These Exchanges had gross revenue of $153,000. They paid back $80,000 in cash dividends to the various organizations on post to aid the soldiers. This program resulted in the purchase of pianos, phonographs, books, billiard tables, athletic goods, and even the instruments for the band.

The football squad

For the body, there were plenty of sports. Walker Field, opened on July 4, 1918, was a large athletic field on post that included a running track, a large grandstand and bleachers that could seat 1,500, dressing rooms, and showers. Edgewood fielded a champion baseball team that played in the Army-Navy Baseball League. Each company had its own football team and an all-star team played other posts. The Track and Field team also proved champions at the first annual meeting of the Army and Navy Athletic Association at Homewood Field, in Baltimore on September 7, 1918. There was also wrestling and boxing, with regularly scheduled events.[26]

The health of the workforce was very important to the Army. Initially, a temporary wooden hospital was constructed near the temporary barracks. The Army later constructed a permanent 314-bed hospital complex near the Edgewood Road gate.

For emergency treatment, three smaller first aid stations were located next to the plants. These first aid stations were normally the first stop for a gas casualty. During the war, 923 gas casualties reported to the stations, although many were probably repeat visits and many others were minor injuries that required little treatment.

Despite having very little knowledge or experience in running the production and filling plants, only three soldiers died at Edgewood Arsenal during the war from chemical agent exposure. Two of the military casualties were from a fire in Shell Filling Plant No. 3 that released phosgene. The third death was in the mustard agent production plant. Only one civilian died of mustard agent exposure during the war and this death was reported by only one source. In hindsight, Chance concluded: "This casualty record was comparatively light when compared with those of the French and British plants, but such a record was to have been expected from the general design of the plants."[27]

The real killer at Edgewood Arsenal, however, was influenza. At one time, there were as many as 1,300 patients packed in the station hospital, many having to lie in corridors. Over 200 soldiers died of this and other diseases during the war. In addition, at least three female nurses of the Army Nurse Corps also lost their lives to the influenza epidemic at Edgewood.[28]

Jet Parker

Life at Edgewood Arsenal for a new recruit was definitely a challenge to one's stamina and loyalty. Private Jet Parker was a typical example. While at Camp Funston, Kansas, he and 15 other men were selected for a special assignment. Parker described his fellow soldiers in his personal diary:

> *The fifteen men who are going on this trip appear to be a fine lot of fellows. All are college men. It is a relief to get out of a bunch where spearing the bread with one's fork seems to be the last word in table manners. Not that this bunch is fastidious. Not in the least. But all seem to know that they are members of the human family.*

Before departure, the men were issued rations consisting of "several dozen 8 oz. packages of hard bread which looks like a thick soda cracker and is about three times as hard and dry, cans of corned beef, of tomatoes, pork and beans and one can of peach jam." Coffee would be issued along the way.

Traveling by train, Parker arrived in Baltimore at the beginning of September 1918 having no earthly idea what he was in for. His first information, gleaned along the way, was not positive:

> *At Baltimore we began to hear about the terrors of this place. Everyone we talked to on the way out here said we were coming to the place God forgot! They tell tales about men being gassed and burned . . .*

His early impressions of the post confirmed his fears. First, he was placed in quarantine in one of the new permanent barracks for two weeks due to the influenza epidemic. While in quarantine, he had a chance to observe his fellow soldiers:

> *men are running around here with all shades of yellow and green hair and all varieties of bandages on their hands. There is a fellow in our room who is called "The Undertaker." Every night when he comes in the boys ask him how many coffins were brought in that day. Last night as he entered someone said, "Well, Undertaker, how many pine boxes today?" "Nineteen," he replied. "Must have been a quiet day." "Yes," said the Undertaker, "Not much stirring today." Then he goes on to tell the new men that he can get them nice metal plates for their coffins instead of the usual wooden ones, if they will make application to him.*

Despite the stories, Parker concluded:

> *Most of the men here seem dissatisfied with the place. However, although the confinement is bad and there is no YMCA where one may pass away the time, if the work is at all congenial, I guess I can stand it if the rest can.*

After completing his confinement, Parker was issued a gas mask that was "not as uncomfortable as I had imagined" and sent on various details around the post. These included policing up around the barracks and digging ditches with a pick and shovel. Parker wrote that he was becoming "very skilled with these tools." Then he was assigned to pushing a wheelbarrow filled with rocks to build a walk. That night, one of his fellow soldiers got mustard agent in his eyes and was taken to the hospital.

Toward the end of September, Parker was detailed to the station hospital to help with the growing influenza epidemic. The reason for this detail was that he had "drug store experience." This experience was apparently enough that he was put in charge of Ward 23 during the night hours. In the ward were 65 patients. Parker described his new responsibility:

The Permanent Station Hospital

> *Sept. 23. Conditions are bad at the hospital. All the wards are filled so they have placed cots along each side of the long corridors and divided them off into wards.*
> *Sept. 27. Have been working twenty-seven hours and have had only three hours sleep. There is no end to the work to be done. Several patients have developed pneumonia and have had to be transferred to other wards. There have been several deaths, chiefly among the colored troops.*
> *Sept. 30. The number of deaths and new cases is rapidly increasing. About twenty have died and at present there are about 1,200 cases here. An explosion at the M.O.* [mustard agent] *plant today seriously injured an officer and three men. One may die.*

By the middle of October, Parker reported that the flu epidemic was almost over and that most of the men detailed to the hospital were reporting back to the production and filling plants. Some, however, did not return: "One of the

fellows that came over the same afternoon I did, died after being sick four days." About the time the flu epidemic ended, the chemical plants began large-scale production. On October 19, an explosion of chloropicrin gassed about 25 men. Parker reported that four died, although the other reports deny any died of chloropicrin poisoning.

The chemical laboratory at Edgewood Arsenal

On October 29, Parker was finally relieved from duty at the hospital and assigned to the chemical laboratory. There he was responsible for checking shells filled with phosgene. Parker wrote: "It is all right until some of the gas escapes and then there's a scramble for gas masks and the open air." By the time of the armistice, Parker reported that he had one of the "softest jobs I ever had" and hoped not to "renew the acquaintance of the pick and shovel." Parker was eventually discharged the day after Christmas.[29]

Although Parker and the other recruits had to deal with deaths caused by disease and chemical agents, there was also at least one death caused by rifle shot. The incident began when a car containing three civilian workers, John H. Gross, John A. Pierce, and Richard Leadsinger, pulled up to the front gate[30] at approximately 5:45 a.m. on July 19, 1918. Gross was driving, with Pierce next to him, and Leadsinger was behind Pierce. They were planning to thresh wheat on one of the remaining fields on Gunpowder Neck.

The two sentries at the gate, Privates Barney Kunkel and H. M. Parsons, were armed with loaded rifles and told not to admit anyone unless they had a workman's button (pass). According to the officer of the day, if someone tried to get past the guards:

> *If they were close enough to hit them they were to use the butt of their guns in the absence of the bayonet. If they were at a distance, to halt them three times, and if they failed to obey, they were to fire.*

Armed guards at the front gate

Kunkel had been on guard duty for 24 hours on and 24 hours off for the last month. He was considered proficient in all the details of guard duty and the handling of his rifle.

Gross stopped the car at the gate and both Kunkel, the sentry on the passenger's side, and Parsons on the driver 's side, waved him on. After proceeding about 15 yards, a shot suddenly struck the back of the vehicle. The bullet entered the car, went through Leadsinger and lodged in Pierce's shoulder. Gross, unhurt, quickly stopped the car.

Parsons, observing the incident, was relieved by the corporal of the guard, and quickly jumped in the car and told Gross to drive them to the camp hospital. Leadsinger was bleeding profusely, but Pierce did not even realize he had been shot until half way to the hospital. Unfortunately, it was too late for Leadsinger. He died at 9:47 a.m. of a gunshot wound.

Meanwhile, the corporal of the guard discovered it was Kunkel who had fired the shot. He was told to arrest him immediately. Kunkel said it was an accident, explaining that when shouldering his rifle, his finger got caught in the trigger. Kunkel asked the corporal, "What will they do to me?" The corporal replied he did not know.

Later that morning a board of investigation was initiated under the command of Major Sidney L. Chappell. They interviewed Pierce in his hospital bed and heard a different version than Kunkel's. Pierce told them that after approving their passes, they drove off and he saw Kunkel step behind the car, "pump" his gun, and fire the fatal shot.

Despite the conflicting testimony, the board reported its findings that morning. They ruled that the shooting was accidental, "although due to the individual carelessness of Private Kunkel in handling his rifle." The

three civilians were determined to be "in no way responsible for the accident." Kunkel was charged with violating the 96th Article of War, "for carelessness in discharging his rifle while a sentry on post at Edgewood Arsenal."[31]

Armistice

On Armistice Day, November 11, 1918, the soldiers of Edgewood Arsenal assembled for a review in front of Colonel Walker. Although the end of the war had come before the completion of their work, 90% of the plant was operational. The installation had manufactured over 6,000 tons of chemicals in 1918, and filled over 1,500,000 shells and grenades. Eventually, 274 temporary and 336 permanent buildings were completed by the end of the war. Approximately 21 miles of standard gauge railroad track, 15 miles of narrow gauge, and 15 miles of macadam roadway were constructed across the swampy peninsula. The final cost of the construction was over $35 million.[32]

Armistice Day, November 11, 1918

Realizing that their work at Edgewood was nearing its end, on December 19, 1918, the officers of Edgewood Arsenal assembled at the Hotel Belvedere in Baltimore for a final honor to Colonel Walker. One participant remembered: "Entrancing music, beautiful orations, appropriate entertainment and delicious refreshments all contributed to the enjoyment of the occasion." Mrs. Walker was presented with a lamp constructed of a 75mm shell and decorated with silver and gold.[33]

The Armistice ended the wartime mission of Edgewood Arsenal, and demobilization activities began almost at once. The production plants were placed in standby status and most construction stopped. The troops were mustered out and by February 1, 1919, approximately two-thirds of the men had been sent home. Some felt the return to civilian status was too fast. One Edgewood veteran wrote about his fellow veterans: "The pity of it is that the public recognition they have received is so wholly inadequate, considering the nature of the work they have accomplished and the high percentage of the casualties they have endured."[34]

By then, the postwar future of Edgewood Arsenal had become the major concern of its owners. The problem was that its parent organization, the CWS, was only a temporary war organization. When the war ended, the CWS was to be abolished. Major General William L. Sibert, the Director of the Chemical Warfare Service, in March 1919, wrote:

> *There is, perhaps, no act perpetrated by the Germans in the Great War that has attracted more universal condemnation than that of the introduction of toxic gas as an agent of warfare. Our papers and magazines have vied with each other in describing the terrible effects of gas upon the troops, while pictures and cartoons have set forth in a still more effective way the horrors of this new agent. As a result, there is a general opinion prevalent that the Peace Congress, now in session at Paris, will put an end to the use of toxic gas, and actions already taken seem to indicate that the Chemical Warfare Service of the United States Army will be abolished.*

He then proceeded to defend the use of chemical weapons as a legitimate tool of war. He concluded: "Would it not be well for the authorities to think long and earnestly before deciding to abolish the Chemical Warfare Service?"[35]

His arguments and those of others finally won the day. In 1920, the CWS was made a permanent part of the Army. Edgewood Arsenal became the primary installation of the new postwar organization. In 1946, the CWS became the Chemical Corps and in 1971, Edgewood Arsenal became the Edgewood Area of Aberdeen Proving Ground, as it is today. Thus, World War I proved to truly be "The End of an Era" and the beginning of a new one for Gunpowder Neck and Harford County.[36]

Notes

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[2] Anonymous, "An Account of German Cloud Gas Attacks on the British Front in France," undated, p. 3.
[3] Suzanne E. G. Chapelle, Jean H. Baker, Dean R. Esslinger, Whitman H. Ridgway, Jean B. Russo, Constance B. Schulz, and Gregory A. Stiverson, *Maryland: A History of Its People* (Baltimore: The Johns Hopkins University Press, 1986), pp. 3-5, 9-12; C. Milton Wright, *Our Harford Heritage: A History of Harford County, Maryland* (Baltimore: French-Bray Printing Company, 1967), pp. 2-6; William B. Marye, "Place Names of Baltimore and Harford Counties," *Maryland Historical Magazine*, Vol. 53 (1958), pp. 35-36.
[4] Leo P. Brophy and Paul E. Ross, "Short History of Edgewood Arsenal," *Harford County Directory* (Baltimore: State Directories Publishing Company, 1953), pp. 100-102; Harry W. Spraker, "The Story of Gunpowder Neck," *Chemical Warfare Bulletin* (April 1940), p. 74.
[5] Spraker, p. 77; Wright, pp. 367-368.
[6] W. G. Leslie, "Harford County, Maryland Colonial Days," *Harford County Directory*, p. 11; Wright, pp. 369-370.
[7] Stewart Sifakis, *Who Was Who in the Union* (New York: Facts on File, 1988), p.62.
[8] Harold R. Manakee, *Maryland in the Civil War* (Baltimore: Maryland Historical Society, 1961), p. 38; J. Thomas Scharf, *History of Maryland* (Hatboro, PA: Tradition Press, facsimile reprint of 1879 edition), Vol. 3, pp. 410-414.
[9] War Department, *The War of the Rebellion: A Compilation of the Official Records of the Union and Confederate Armies* (Washington: Government Printing Office, 1891), Series I, Vol. 37, Pt. 1, pp. 224-227, 229-230, Pt. 2, pp. 192-193, 212, 214, 247; Harry Gilmor, *Four Years in the Saddle* (New York: Harper and Brothers, 1866), pp. 194-196; Robert E. Michel, *Colonel Harry Gilmor's Raid Around Baltimore* (Baltimore: Erbe Publishers, 1976), pp. 16-20; Robert Swope, Jr., "The Gunpowder River Raid," *North South Trader* (May-June 1977), pp. 23-25.
[10] Spraker, p. 79.
[11] John Cadwalader, "The End of An Era," *Chesapeake Bay Magazine* (July 1984), pp.47-49; Spraker, pp. 72-73; Sifakis, p. 62.
[12] Woodrow Wilson, "A Proclamation," December 14, 1917; Cadwalader, p. 49.
[13] Hearing before the Committee on War Claims, House of Representatives, 71st Congress, 3rd Session on S. 654, January 9, 1931.
[14] Cadwalader, p. 49; Spraker, p. 79.
[15] R. C. Marshall, Jr., and Edward B. Ellicott, "Introduction to Report on the Construction of the Edgewood Plant of the Edgewood Arsenal," March 1919, p. 4; Edwin M. Chance, "History of the Edgewood Plants, Edgewood," December 31, 1918, p. 8; Chemical Warfare Service, "Edgewood Facts," 1918, p. 1.
[16] William H. Walker, "History of Edgewood Arsenal," (December 1918), p. 10; William McPherson, "An Historical Sketch of Edgewood Arsenal," (March 1919), p. 26; Marshall and Ellicott, "Report on the Construction of the Temporary Structures at Edgewood Plant of the Edgewood Arsenal," (March 1919), p. 2.
[17] Chance, pp. 20, 32; McPherson, pp. 13, 15, 24; War Department General Order No. 54, March 6, 1918; Edgewood Arsenal General Order No. 7, May 4, 1918; *The Chemical Warfare*, Vol. 1, No. 3 (September 17, 1918), p. 6.
[18] Ibid., p. 5.
[19] "Major General Sibert and 'New York Times' Discuss Gas Warfare," *Chemical Warfare* (October 16, 1919), p. 3; John N. Beffel, "Gas in Area D!" *Chemical Warfare* (December 15, 1927), pp. 243-245.
[20] Marquis, Albert Nelson, ed., *Who's Who in America* (Chicago: The A. N. Marquis Company, 1936), Vol. 19, p. 520; Chance, pp. 1-2, 9-12, 33; McPherson, p. 60.
[21] Walker, p. 1.
[22] Chance, pp. 11-12, 23-27, 42; William B. Leach, "Mustard Gas Production in the United States," *Chemical Warfare* (October 23, 1919), pp. 8-14; McPherson, pp. 17, 20, 36, 46, 48-49.
[23] McPherson, p. 52-53; Walker, p. 9; "Edgewood Facts," p. 2.
[24] Chance, pp. 12, 56; McPherson, p. 54.
[25] Chance, p. 56.

[26] *The Chemical Warfare*, Vol. 1, No. 3 (September 17, 1918), pp. 13, 18, 24-25 and Vol. 1, No. 5 (March 1919), pp. 44-45; McPherson, p. 55.
[27] Chance, p. 62.
[28] *The Chemical Warfare*, Vol. 1, No. 5 (March 1919), pp. 30-31.
[29] Diary of Jet Parker, September 2, 1918 to December 5, 1918.
[30] This was the old front gate located on Edgewood Road in Edgewood.
[31] "Proceeding of a Board Convened at Edgewood Plant, Edgewood Arsenal, Edgewood, MD., July 19, 1918," National Archives, Washington, DC, Record Group 175.
[32] "Edgewood Facts," pp. 1-2.
[33] *The Chemical Warfare*, Vol. 1, No. 5 (March 1919), p. 42.
[34] Ibid., p. 29; McPherson, p. 79.
[35] *The Chemical Warfare*, Vol. 1, No. 5 (March 1919), p. 2.
[36] "The End of an Era" was the name of John Cadwalader's article in the *Chesapeake Bay Magazine* (July 1984).